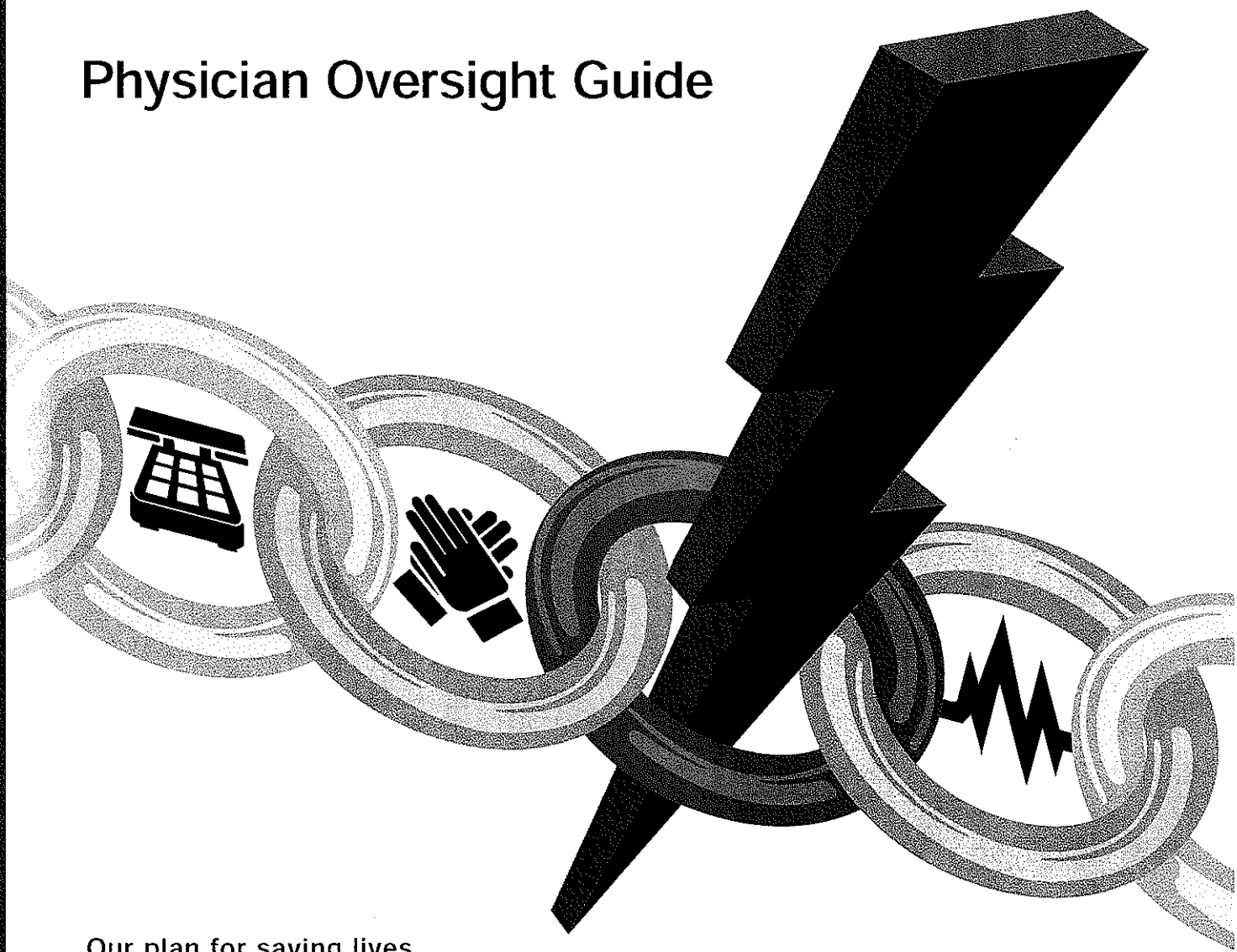
American Heart Association®

Fighting Heart Disease and Stroke

Public Access Defibrillation

Physician Oversight Guide



Our plan for saving lives.

PAD Oversight Physician Guide

This is a resource to guide physicians who provide medical oversight for a Public Access to Defibrillation (PAD) program. It will help them develop a comprehensive implementation plan tailored to the specific PAD site. This guide focuses on issues to consider throughout the implementation process. Key factors that should drive decisions are highlighted and options are discussed.

PAD Program Implementation

Overview

The goal of a PAD program is to increase the rate(s) of survival for people suffering sudden cardiac arrest. The key is to minimize the time from the onset of cardiac arrest to defibrillation. PAD programs should be designed to deliver the first shock to the victim within 3–5 minutes of collapse. (Three minutes is optimal, five minutes is acceptable.) Accepted data shows a 7–10 percent increase in mortality for every minute that passes without defibrillation.

Traditionally, only emergency medical personnel and healthcare providers had the ability to defibrillate. They were trained to interpret arrhythmias and determine when a shock was needed. Today, a new generation of defibrillators—called automated external defibrillators (AEDs)—makes it possible for trained lay rescuers to defibrillate.

Public Access to Defibrillation is having trained lay rescuers equipped with defibrillators in settings where large numbers of people congregate, live or work. Establishing PAD programs helps ensure that the people most likely to arrive first at a medical emergency are equipped and trained to help.

Placing an AED in an environment is simply one component of a PAD program. Successful PAD programs include these four key elements:

- Having physician oversight to monitor the program and ensure quality improvement and quality control.
- Using and maintaining AEDs according to the manufacturer's specifications.
- Training targeted responders in CPR and how to use an AED.
- Integrating with the local emergency medical services (EMS) system.

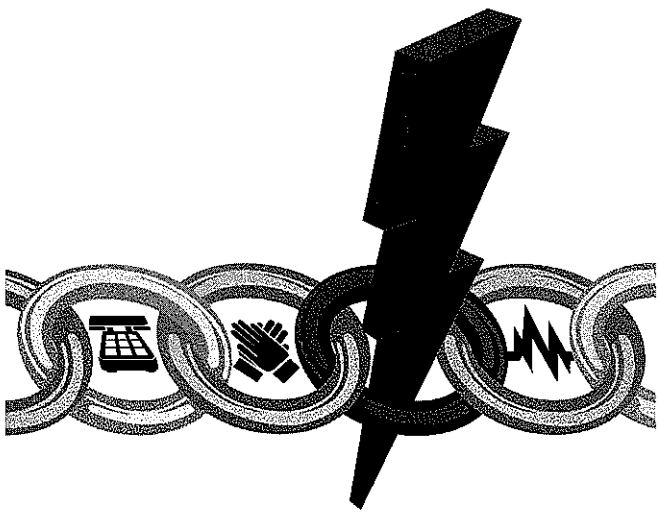
PAD Oversight Physician

The United States Food and Drug Administration (FDA) has approved AEDs for public use with a physician's prescription. To ensure a safe and effective PAD program, it's essential to provide additional physician oversight. The physician's role and time commitment depends on the size and characteristics of the program.

The key roles and responsibilities of the PAD oversight physician are:

- Be responsible for all medical control aspects of the program.
- Ensure that rescuers are properly trained and their skills are appropriately maintained.
- Help the PAD site establish and review procedures for AED use.
- Help the PAD site establish a quality review and improvement plan.
- Help the PAD site establish and maintain a relationship with the local emergency medical services (EMS) agency.

The physician's role will be greatest at the beginning. In principle, once the program is established, someone else named as the PAD program coordinator (sometimes referred to as the PAD program director) may actually handle most of the day-to-day duties associated with the program. A PAD program coordinator is most often someone on site and able to do such tasks as maintenance checks on the AED, inventorying supplies and reordering as needed. The PAD oversight physician should determine the extent of the PAD program coordinator's responsibility.



Rationale

It's important to understand the rationale for a PAD program before trying to develop and implement one.

The American Heart Association estimates that over 220,000 people die each year from sudden cardiac arrest. That's more than 600 deaths a day. About 75-80 percent of these events occur outside a hospital. Unfortunately, available statistics show an average 5 percent survival to hospital rate.

The most common initial rhythm of a sudden cardiac arrest is ventricular fibrillation (VF). VF is a rapid and chaotic heart rhythm resulting in a loss of synchronization between heartbeat and pulse. The only definitive therapy for VF is defibrillation. This is why early defibrillation is a critical link in the chain of survival.

Chain of Survival

More people can survive sudden cardiac arrest when a certain sequence of events happens as quickly as possible. This series of steps is called the chain of survival.

- **First Link:** Early Access is recognizing that a cardiovascular emergency exists and immediately notifying the EMS. In most communities, calling 9-1-1 accesses the EMS system. Early access to emergency care only happens if you know who to call and when to call.
- **Second Link:** Early CPR means starting cardiopulmonary resuscitation promptly. When CPR is performed, ventilations and chest compressions circulate oxygen-rich blood to vital organs. This buys time for the victim until defibrillation can be given.
- **Third Link:** Early Defibrillation is often called the most critical link because defibrillation is the only definitive therapy for VF. Giving trained lay rescuers early defibrillation capabilities can shorten the time from a victim's collapse to defibrillation. Reducing this interval positively impacts the survival of cardiac arrest patients.

EMS and healthcare providers have traditionally performed defibrillation, but quick EMS response isn't always possible. Factors such as heavy traffic, secured buildings, gated communities, large building complexes and high-rises can delay even the best EMS systems. In some communities EMS personnel with defibrillation capabilities can't reach the cardiac arrest victim within the 3–5-minute window. For these situations, the American Heart Association advocates establishing PAD programs.

- **Fourth Link:** Early Advanced Care means having trained providers arriving quickly to administer advanced lifesaving interventions. These trained professionals can stabilize patients and provide more advanced care during resuscitation. They can also treat heart rhythms other than VF and use advanced airway therapies and intravenous drugs. This link is stronger when appropriate healthcare providers are trained in advanced care such as Advanced Cardiovascular Life Support (ACLS) and Pediatric Advanced Life Support (PALS).

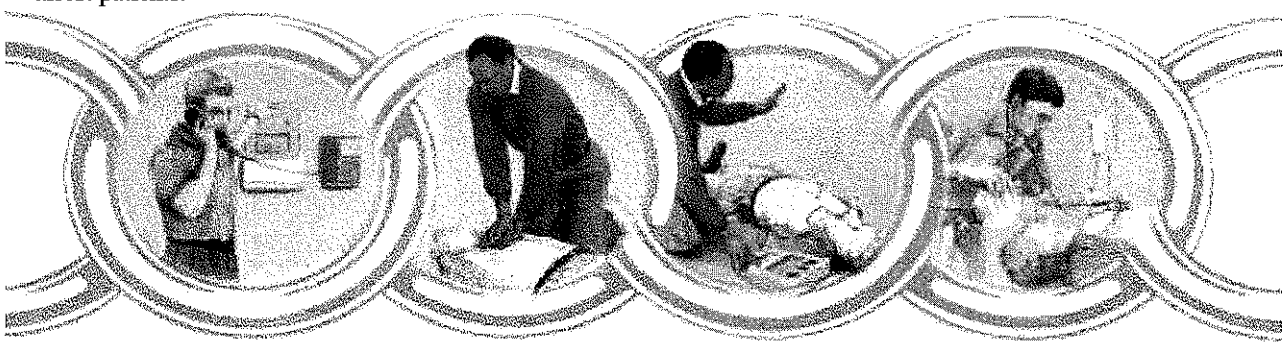
Placing Automated External Defibrillators

Evidence supports establishing PAD programs in these cases:

a. The frequency of cardiac arrest events is such that there's a reasonable probability of one AED use in five years (estimated event rate of one sudden cardiac arrest per 1000 person-years).

b. An EMS call-to-shock time interval of less than five minutes can't be reliably achieved with conventional EMS services. In many communities, this EMS call-to-shock time interval can be achieved by training and equipping laypersons to

- Function as first responders in the community
- Recognize cardiac arrest
- Activate the EMS system (phoning 9-1-1 or another appropriate emergency response number) at appropriate times
- Provide CPR
- Attach/operate an AED safely



Planning Phase

The goal of a PAD program is to increase the rate of survival for victims of sudden cardiac arrest. To maximize the program's effectiveness, it's important for the PAD oversight physician to systematically define how the program will operate. The American Heart Association recommends exploring and defining the following key implementation considerations while planning the PAD program. Detailed information is listed below.

- Identify state and/or local requirements for PAD programs.
- Integrate with the local EMS agency.
- Identify appropriate responders to be trained.
- Determine the number of AEDs and placement.
- Select the AED.
- Determine training for responders.
- Promote internally to PAD program participants and rescuers.
- Promote the PAD program externally.

The local EMS system is a valuable resource when addressing these issues because it's an intricate part of each community's chain of survival. EMS personnel are dispatched when 9-1-1 (or another emergency number) is activated and are ultimately responsible for delivering out-of-hospital emergency care. It follows that a PAD program supplements the local EMS system. To make a PAD program most effective, the local EMS system should always be an active partner in planning the program and in the follow-up to any emergency within the program.

In addition to the EMS system, use organizations such as the American Heart Association, state EMS offices, AED manufacturers, local or state medical societies and local health departments as resources when addressing these key implementation issues.

Identify State and/or Local Requirements for PAD Programs

State and local requirements for PAD programs play a significant role in setting the program parameters. Most states specify what type of training is accepted, how to work with the state and local EMS, and how to maintain or renew the PAD program. Most states also offer limited immunity to certain PAD program participants (trained rescuer, trainer, acquirer and/or physician). To view a summary of a state's legislation as it relates to PAD programs, go to www.americanheart.org. For more detailed information, contact the American Heart Association at 1-800-AHA-USA1 or the state EMS office. Be aware of the following key issues as you start this process.

- Most state laws require notification of or registering PAD programs with the local EMS system.
- Most state laws require a physician licensed in that state to act as the PAD oversight physician (medical director).
- Most state laws require nationally recognized CPR/AED training for responders, such as the American Heart Association's Heartsaver AED course.
- Some jurisdictions have local ordinances that regulate aspects of PAD programs.

Integrate with the Local EMS Agency

Always keep in mind that integration with the local EMS agency is one of the four key elements of a PAD program. Most states require that PAD program sites provide notification of or registering the PAD site with the local EMS agency. Regardless of state requirements, the local EMS agency should be viewed as a collaborative partner in placing AEDs and developing internal procedures, quality improvement and incident review procedures.

Identify Appropriate Responders to be Trained

The first step is to define who the "public" is for your particular setting. Knowing the public you will target for defibrillation access will drive your decision on key implementation points.

The Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care categorizes three levels of PAD users. The distinguishing factor between the three levels is the definition of the public or who has physical access to defibrillation.

Level 1: Nontraditional Responders

Nontraditional responders are persons other than health-care personnel, such as police, firefighters, security personnel, sports marshals, ski patrol members, ferryboat crews, and flight attendants, whose job duties require them to respond to an emergency. Traditionally, however, they have not been asked or expected to take any action other than perform basic CPR.

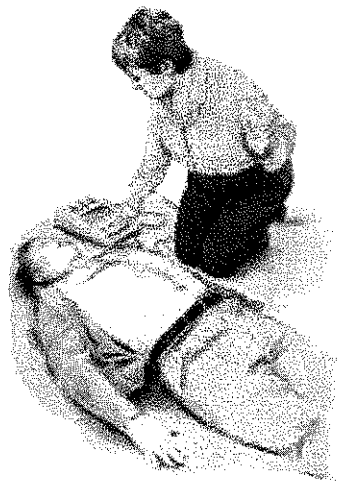
Level 2: Targeted Responders

Targeted, or work site, responders, who may also be called "citizen responders," often participate in PAD programs. These responders are employees of companies, corporations or public facilities with established PAD programs. Their location at the worksite (e.g., central reception area staff) makes them a natural choice to be the primary responder with the AED. PAD programs can shorten the time to defibrillation and improve the chance of survival from sudden cardiac death in the workplace or community.

Level 3: Responders to Persons at High Risk

Family members and friends living with or visiting persons at high risk for cardiac emergencies are another potential category of responders. They often participate in early defibrillation programs and are taught CPR and how to use an AED when a friend or loved one is at high risk for sudden cardiac death.

The American Heart Association recommends that as many trained rescuers as possible be given access to defibrillation. When identifying your targeted responders, consider people who are typically on the premises and respond to emergency situations as part of their job. Security guards and members of safety response teams are excellent candidates for becoming trained rescuers. Another possibility is people who are typically on the premises and willing to respond to a cardiac emergency in the context of the PAD program. These may be office personnel or residents depending on the PAD program site.



Determine the Number of AEDs and Placement

When determining the number and placement of AEDs, consider distance from defibrillation access to potential arrest incident rather than the distance from defibrillation access to trained rescuer. AEDs should be strategically placed to optimize the response rate of 3–5 minutes from collapse to shock. (Three minutes is optimal, five minutes is acceptable.) Conceptually, the three highest impact areas will be:

- High Density: workplace cafeteria, airport, etc.
- Difficult Access: secured areas within a building, gated communities, etc.
- High Risk: fitness centers, extended care facilities, etc.

Besides determining where to put the AEDs, consider and discuss the following options during planning. The PAD program site environment will drive the decisions.

Limited vs. Open Accessibility: Limited accessibility restricts access to the AED to a defined individual or group. This means the general public can't easily obtain and use defibrillators. Access to AEDs may be limited to trained rescuers within the PAD program or may be expanded to the public for defined trained rescuers — rescuers not a part of this PAD program system but who are properly trained in CPR and AED.

Open accessibility is placing AEDs so that they are available to the general public.

Secured vs. Unsecured: A secured device implies that the AED is locked in an office, a wall-mounted cabinet, etc. Selecting those who can unlock the device will depend on the type of accessibility appropriate for the PAD program site.

An unsecured device is typically placed in a public area and isn't locked.

Automatic Notification System:. This type of system automatically notifies a responding entity when the AED is removed or the cabinet is opened. This notification may be sent directly to the local EMS agency or to in-house security, who will then notify the EMS system.

Audio-visual Alarm: This type of alarm activates lights and/or an audio alarm when the AED is removed or the cabinet is opened.

Supplies: The American Heart Association recommends that a razor, towel, barrier device, disposable gloves, and two sets of electrode pads be stored with the device.

Selection of the AED

Currently, several AEDs on the market are suitable for PAD programs. The American Heart Association does not recommend one device over another. Selecting a device will be influenced by the needs of the PAD program site and the PAD program's trained rescuers. The PAD oversight physician will also need to consider the following when selecting a specific device:

Determine Training for Responders

First, review the state and local requirements for training for a PAD program. Acceptable curriculum for responder training, organizations offering such training and training renewal intervals are often outlined in these requirements. From there, you can plot your training program and schedule. Scheduling initial and renewal training may be a responsibility assigned to the PAD program coordinator.

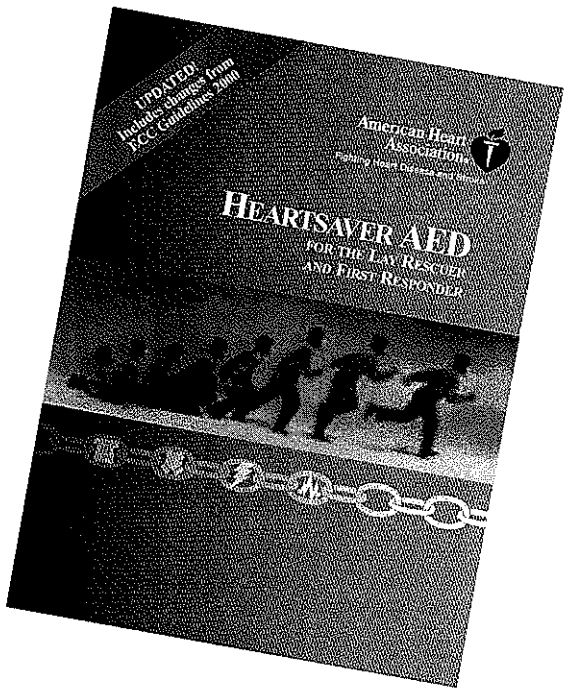
Initial Training: AEDs can analyze the electrical activity of the victim's heart and determine if a shock is needed. However, more skills are needed to make sure the device is used most effectively and to ensure the safety of the user and bystanders. Training can do this. The American Heart Association recommends that the initial training should teach the user:

- How to recognize the warning signs of a heart attack.
- Why and how to activate the emergency medical services system (EMS).
- How to buy time for the victim by performing one-rescuer adult CPR until the AED arrives.
- How to assess the patient and determine if using an AED is warranted.
- How to attach the AED pads if needed and ensure the device is used properly.
- How to follow safety protocols to protect the user and bystanders.
- How to deal with unusual situations (such as a victim with an implanted defibrillator or using an AED on a victim lying in water).

One such training is the American Heart Association Heartsaver AED course. Heartsaver AED is specifically designed for targeted traditional and non-traditional responders and lay rescuers in a PAD program. This 3 1/2 – 4-hour course prepares the targeted responder to perform CPR and to use an AED. The Heartsaver AED course is scenario-based. This lets participants learn by doing so rescue skills become reflexive. This is essential when PAD program responders aren't used to routinely responding to medical emergencies. For more information on Heartsaver AED or to locate a course, call the American Heart Association at 1-877-AHA-4CPR.

Skills Review (refresher, update, etc.): Skills review between the initial training and retraining course is highly recommended. This can be accomplished by conducting mock drills, running scenarios, or the rescuer demonstrating CPR skills and AED use. A skills review can be scheduled every 30, 60 or 90 days. Again, the PAD program site and the trained rescuers within the program will drive this decision. Conducting skills reviews may be a designated responsibility of the PAD program coordinator.

Retraining: Nationally recognized training courses, such as Heartsaver AED, have a standard renewal course and recommended renewal time frame. The American Heart Association recommends that formal retraining be done every two years.



Internal Promotion to PAD Program Participants and Rescuers

PAD program participants are more effective when they realize the importance of the PAD program and their role in the chain of survival. The goal is to create awareness among as many PAD program participants as possible about how to recognize a medical emergency and what to do. Here are some ideas to consider when developing the promotion plan.

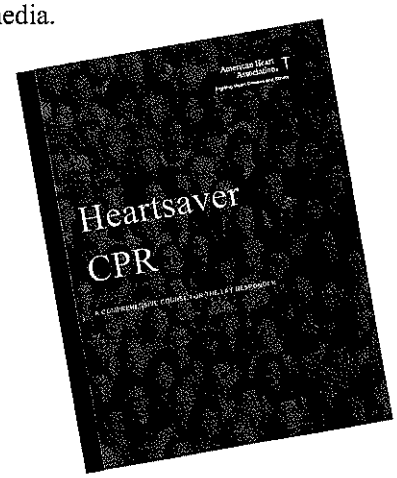
Internal Newsletter: Start promoting the PAD program with an article in an internal publication. Include "sidebars" relating to cardiac arrest statistics (i.e., most cardiac arrest occur outside the hospital) and local CPR/AED save stories. Follow up with a series of articles highlighting each link in the chain of survival and what individuals can do to help strengthen each link.

Heartsaver CPR Course: Provide an opportunity for all PAD program participants to take the Heartsaver CPR course, or tell them where to go for CPR training. Heartsaver CPR is a scenario-based course with a text that prepares the student before the course, integrates learning during the course and can be used as a reference after the course. In some areas, mass CPR training events are another viable option. For more information on CPR courses, call the American Heart Association at 1-877-AHA-4CPR.

Lunch Series: Host a lunch series with local speakers discussing chain of survival topics. This may include someone from the local EMS agency, a CPR/AED survivor or an American Heart Association volunteer.

External Promotion of PAD Program

Depending on the PAD program site, implementing the program may be promoted to clients, customers, vendors and the outside community as a whole. This campaign can be conducted through publications distributed outside the organization as well as local newspapers and/or other media.



Developing Internal Procedures

Certain aspects of a PAD program need a written procedure for implementation. These internal procedures help the trained rescuers and PAD program participants clearly understand protocols and expectations. Once written procedures are in place, they should be distributed to all appropriate participants. One key system to define is how updated PAD program procedures will be disseminated and who will do it. In most cases, this will be the PAD program coordinator.

AED Maintenance Procedures: Designate someone to conduct scheduled and preventive maintenance checks according to the manufacturer's recommendations. Also develop a program and written checklist to assess the preparedness of the AEDs and supplies. Use this checklist as a supplement to regularly scheduled, more detailed maintenance checks recommended by the manufacturer. At minimum, this checklist should include:

- Verifying placement (Is it where it is supposed to be?)
- Verifying battery installation
- Checking status/service indicator light
- Inspecting exterior components and sockets for cracks
- Checking supplies (razor, towel, barrier device, disposable gloves and two sets of electrode pads)

Someone should be responsible for proper follow-up with the AED manufacturer on maintenance issues identified during the maintenance checks. Develop a system for ordering and replenishing supplies. These may be a designated responsibility of the PAD program coordinator.

Internal Emergency Response Plan: First, identify the mechanism for activating the internal response. Consider the following when making your decision:

- Overhead paging system/intercom
- Beepers for trained rescuers
- Develop innovative messaging for number-only displays such as assigning numbers to locations within the PAD program site.
- Phone tree with dedicated line
- Internal radio dispatch

Two key points to include are 1) activation of the emergency response number (usually 9-1-1) for your

community and 2) activation of internal trained rescuers. Both must be activated as quickly as possible. The PAD program site environment will determine the steps in activation.

Education Program for Activating Internal Response Plan: Information on how to activate the emergency response plan should be given to all PAD participants. To maximize the PAD program effectiveness, everyone must know how and when to notify trained rescuers to get to the scene of an emergency. Consider informing them with:

- Paycheck flyer
- Phone sticker
- Posters — consider areas of frequent activity
- Closed-circuit TV
- E-mail
- Speaker luncheon
- Internal newsletter
- Department meetings
- Staff meetings

Transfer Patient Care to Local EMS Agency: Develop a written policy and procedure specifically for transferring patient care to the local EMS agency upon their arrival. This process will be based on existing EMS protocols; however, this written policy and procedure must be communicated to the trained rescuers.

Data Collection and Management: As with any medical information, data regarding the event and patient are confidential. Apply rules and procedures already in place for protecting this confidentially to the events and activities of the PAD program.

All AEDs capture heart rhythm and device data; however, depending on the data collection system, additional data points can be captured by voice recorder or an event summary form. The additional data and information should be accurately captured and shared between the PAD program and the local EMS agency.

Two factors that will drive the decision to capture more data points are state regulations and existing practices of local EMS agency. Some states require that a standard "incident report" or "AED use sheet" be completed and submitted to the state EMS office or local EMS agency. This information is most often provided in the state AED registration material.

Some local EMS agencies may collect a defined set of data points and will need more information from the PAD site. The following are possible data points that can be captured by either a voice recorder or an event summary form.

- Was the event witnessed? Yes or No
- Was bystander CPR initiated? Yes or No
- Location of event
- Was internal response plan activated? Yes or No
- If yes, time of activation?
- Time arrived at patient's side with AED?
- Name of the AED rescuer
- Name of the 9-1-1 caller
- Name of the CPR rescuer
- Names of bystanders
- Condition of victim at time of transport

Post-Event Considerations

Ensuring that appropriate follow-up occurs after a cardiac arrest event is also a key responsibility of the PAD oversight physician. Post-event considerations include putting the AED back into service, conducting an event review, providing a process of emotional support for trained rescuers and monitoring patient outcome. Consider the following:

Integrating AED back into service: Someone such as the PAD program coordinator should be given this responsibility. This written procedure should incorporate these elements:

- Check supplies and replenish as appropriate (this includes electrode pads, towel, razor, barrier device and disposable gloves).
- Clean and disinfect the device.
- Check the battery and replace it, if needed.
- Check the device and housing for cracks.
- Return the AED to the designated place.

Event Review: Use the information gathered from the incident review process to improve the PAD program. Include a way to provide feedback to the rescuers and to evaluate the effectiveness of the internal response procedures.

Specifically, the event review process should evaluate response times and intervals for each activity done during the incident. For example, how much time passed between finding the victim and calling 9-1-1? How much time elapsed between activating the internal response system and the AED reaching to the victim? Reviewing this information can identify internal response procedures that could be improved. The PAD program coordinator, under the supervision or direction of the PAD oversight physician, may perform aspects of the incident review.

Remember that information that will be included in the event review process must be captured through a mechanism such as a voice recorder or an event summary form. Review the Data Collection and Management section for more details.

Another important aspect of the event review process is providing feedback to rescuers on response and using the AED. The rescuer should get comments on specific activities that were done properly and in accordance with the internal response procedure as well as actions that can be improved. Strategies designed to help the rescuer improve skills and/or actions should be discussed and implemented. Areas for improvement and "lessons learned" can also be incorporated into the skills review and mock drills.

Trained Rescuer Emotional Support Process (critical incident stress management procedures): Lay public rescuers need significant support to ensure the event does not impact their emotional health. It's important to allow rescuers to voice their fears and concerns in a non-threatening environment. The PAD oversight physician should ensure that proper follow-up is given to the rescuers soon after the event. The local EMS agency can recommend community resources to support rescuers.

Patient Outcome Monitoring: In conjunction with the local EMS agency, a communication system should be developed to follow patients through the healthcare system. The outcome information should be incorporated into the feedback process for the rescuers.

Glossary

PAD Oversight Physician: A designated licensed physician providing medical oversight to a PAD program. The PAD oversight physician is responsible for these aspects of the program: medical control, development, implementation, and establishing response procedures and a quality improvement plan.

PAD Program Coordinator: A person designated by the PAD oversight physician to conduct day-to-day duties associated with the PAD program. These duties may include performing AED maintenance checks, ordering supplies, etc. This person may serve as the physician's point of contact for the PAD program.

Chain of Survival: A particular sequence of events happening as rapidly as possible in response to a cardiac emergency. Early Access, Early CPR, Early Defibrillation, and Early Advance Care are the four links in the chain of survival.

Targeted Responder: A person or category of people determined to be appropriate to respond to a medical emergency.

Trained Rescuer: A targeted responder who is properly trained in CPR and AED use and who responds to a medical emergency within the confines of a PAD program and defibrillates the victim.

PAD Program Participants: Members of the PAD site environment but not targeted responders. These people will typically benefit from the defibrillation capabilities in a cardiac arrest event. It's important for them to be aware of the PAD program, what to do in an emergency, and how to activate the internal response procedures.

To help in the distribution of ECC materials, the American Heart Association has partnered with three companies that provide the highest quality of customer service and support. To order, call or fax the numbers below:

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